

KEEP OUT OF REACH OF CHILDREN DANGER

Precautionary Statements Hazards to Humans and Domestic Animals DANGER

CORROSIVE: Causes irreversible eye damage • May be Fatal if swallowed • Causes skin irritation • Harmful if inhaled or absorbed through skin. • Do not get in eyes, on skin or on clothing. • Avoid breathing spray or mist. • When loading or handling wear protective eyewear (goggles or face shield) Wear long-sleeved shirt and long pants, socks, shoes and chemically resistant gloves • Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals • Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. • Remove and wash contaminated clothing separately before reuse.

Personal Protective Equipment

Applicators and other handlers must wear:
- Coveralls, over long-sleeved shirt and long pants
- socks and chemical resistant footwear
- goggles or face shields
- Chemical-resistant gloves (such as barrier laminate, butyl nitrile/neoprene rubber, PVC or viton)

Engineering Controls

When handlers use closed metering systems the handler requirements may be reduced or modified to long-sleeve shirt, long pants, shoes and socks.

User Safety Requirements

Follow manufacturers' instructions for cleaning & maintaining PPE if no such instructions exist for washables, use detergent and hot water. Keep and wash PPE separately from other laundry

Users must wash hands before eating, drinking, chewing gum, or using the toilet. Users must remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users must remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Application Restrictions

Do not apply this product directly in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic organisms. Apply this product only as specified on this label. Do not contaminate water by cleaning of equipment, or disposal of wastes. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.
Storage: To maintain product quality, store at temperatures below 35°C. Keep container tightly closed when not in use.
Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.
Container Disposal
Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Notice: Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions. SELLER MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Label Revise Date: 3/19/2012•RA4697

AQUCAR™ DB 20 Water Treatment Microbiocide

To Control Coliform and Other Bacteria in Publicly-Owned Treatment Works; controls bacteria, fungi, and yeasts in paper mills and enhanced oil recovery systems; controls bacteria, fungi, and algae in industrial recirculating water cooling towers; controls slime-forming bacteria and fungi in air-washer systems; controls bacteria, fungi and algae in reverse osmosis systems.

FOR INDUSTRIAL USE ONLY

Active Ingredient:

2,2-Dibromo-3-nitropropionamide **20%**

Inert Ingredient(s): **80%**

Total **100%**

FIRST AID	
IF IN EYES	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 30 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Obtain prompt medical treatment, preferably from an ophthalmologist
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15–20 minutes.• Call a poison control center or doctor for treatment advice.
IF SWALLOWED	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to do so by the poison control center or doctor.
IF INHALED	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
Have product container or label with you when calling a poison control center or doctor or going for treatment.	
HOT LINE NUMBER	
IN CASE OF AN EMERGENCY endangering life or property involving this product, call collect (989)636-4400.	
NOTE TO PHYSICIAN	
If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.	

Produced For



E.P.A. Registration No. 464-426

E.P.A. Est. No. 56485-PA-001

THE DOW CHEMICAL COMPANY

Midland, Michigan 48674

989-636-4400

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DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with the labeling.

NOTE: ADD AQUCAR DB 20 WATER TREATMENT MICROBIOCIDE SEPARATELY TO THE SYSTEM. DO NOT MIX IT WITH OTHER ADDITIVES, IN ORDER TO AVOID DECOMPOSITION OF AQUCAR DB 20 Water Treatment Microbiocide DUE TO THE HIGH pH OF MANY ADDITIVE FORMULATIONS.

PAPER MILLS

For the control of bacterial, fungal, and yeast growths in pulp, paper and paperboard mills, add AQUCAR DB 20 Water Treatment Microbiocide at the rate of 0.15-0.50 lb / ton of pulp or paper (dry basis). Addition may be continuous or intermittent, depending upon the type of system and the severity of contamination. It must be made with a metering pump at a location that will insure uniform distribution of AQUCAR™ DB 20 Water Treatment Microbiocide in the mass of fiber and water, such as the beaters, jordan inlet or discharge, broke chests, furnish chests, save-alls, and white-water tanks.

HEAVILY FOULED SYSTEMS must be boiled out, then treated with 0.15 -0.35 lb AQUCAR™ DB 20 Water Treatment Microbiocide / ton of paper (dry basis), as necessary for control.

MODERATELY FOULED SYSTEMS must be treated continuously with 0.35-0.50 lb AQUCAR™ DB 20 Water Treatment Microbiocide / ton of paper (dry basis) until the slime accumulation is controlled. Addition rates can then be reduced to 0.15-0.35 lb AQUCAR™ DB 20 Water Treatment Microbiocide / ton of paper on a continuous or intermittent basis, as needed for control. Dislodged slime may cause breaks in the paper and a clean-up of the paper machine may be advisable.

SLIGHTLY FOULED SYSTEMS must be treated continuously with 0.15 -0.35 lb AQUCAR™ DB 20 Water Treatment Microbiocide / ton of paper (dry basis) until the slime is controlled, then added on an intermittent basis to maintain control.

ENHANCED OIL RECOVERY SYSTEMS

For controlling slime-forming bacteria, sulfide-producing bacteria, yeasts, and fungi in oil field water, polymer or micellar floods, water-disposal systems, or other oil field water systems, add 1-80 ppm AQUCAR DB 20 Water Treatment Microbiocide (0.1-6.4 gal AQUCAR DB 20 Water Treatment Microbiocide per 2400 barrels of water) depending on the severity of contamination. Additions must be made with a metering pump either continuously or intermittently.

CONTINUOUS FEED METHOD

When the system is noticeably fouled, add 10-80 ppm AQUCAR DB 20 Water Treatment Microbiocide (0.8-6.4 gal AQUCAR DB 20 Water Treatment Microbiocide per 2400 barrels of water) continuously until the desired degree of control is achieved. Subsequently, treat with 1-15 ppm AQUCAR DB 20 Water Treatment Microbiocide (0.1-1.2 gal AQUCAR DB 20 Water Treatment Microbiocide per 2400 barrels of water) continuously or as needed to maintain control.

INTERMITTENT OR SLUG METHOD

When the system is noticeably fouled, or to maintain control of the system, add 10-80 ppm AQUCAR DB 20 Water Treatment Microbiocide (0.8-6.4 gal AQUCAR DB 20 Water Treatment Microbiocide per 2400 barrels of water) intermittently for 4-8 hours per day, and from 1-4 times per week, or as needed depending on the severity of contamination.

Addition of AQUCAR DB 20 Water Treatment Microbiocide may be made at the free water knockouts, before or after the injection pumps and injection well headers.

NOTE: FOR CONTROL OF BACTERIA, YEAST, AND FUNGI IN AQUEOUS SOLUTIONS OF BIOPOLYMER USED IN FLOODING OPERATIONS, add 15-80 ppm AQUCAR DB 20 Water Treatment Microbiocide (1.2-6.4 gal AQUCAR DB 20 Water Treatment Microbiocide per 2400 barrels of water). Additions of AQUCAR™ DB 20 Water Treatment Microbiocide must be made with a metering pump IMMEDIATELY after preparation of the aqueous biopolymer solution to prevent loss of viscosity.

AIR-WASHER SYSTEMS

Add 0.0015-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system, depending upon the severity of contamination to control slime-forming bacteria and fungi in industrial air-washer systems.

INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.003 -0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: When microbial control is evident, add 0.0015-0.047 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system every 2 days or as needed to maintain control.

Badly fouled systems must be cleaned before treatment is begun.

CONTINUOUS FEED METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.003-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system.

SUBSEQUENT DOSE: Maintain this level by pumping a continuous feed of 0.0015-0.047 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system per day.

Badly fouled systems must be cleaned before treatment is begun.

NOTE: For use only in industrial air-washer systems that maintain effective mist eliminating components.

PUBLICLY-OWNED TREATMENT WORKS

TO CONTROL COLIFORM AND OTHER BACTERIA

Add AQUCAR DB 20 Water Treatment Microbiocide at a concentration of 1.0 to 10.0 ppm by weight of water being treated, depending on the severity of contamination in the system. Addition should be CONTINUOUS and must be made with a metering pump at a point in the system where mixing will be rapid and thorough. Add AQUCAR DB 20 Water Treatment Microbiocide to the system in a location where contact time will be 30 minutes or greater before reaching the outfall.

TO USE AS A CO-TREATMENT WITH CHLORINE

Add 0.4-1.5 ppm AQUCAR DB 20 Water Treatment Microbiocide by weight of water treated. Chlorination must result in a minimum detectable residual (i.e., greater than zero but less than the NPDES permit level). Addition must be CONTINUOUS and made at a point just after initial chlorine mixing. Rapid mixing is necessary for maximum effectiveness.

AQUCAR™ DB 20 Water Treatment Microbiocide must be added at a location where a contact time of 10 minutes or longer will be provided before reaching the outfall.

NET CONTENTS:

NET WT: /

INDUSTRIAL RECIRCULATING WATER COOLING TOWERS

Add AQUCAR DB 20 Water Treatment Microbiocide to the basin (or any other point of uniform mixing).

Additions should be made with a metering pump; it may be continuous or intermittent, depending on the severity of the contamination when treatment is begun, and the retention time of the system.

Optimum performance with this product is attained by continuous or intermittent treatment. If “shock” treatment is used, the blowdown must be discontinued for 24-48 hours.

FOR CONTROL OF BACTERIA

Add 0.00095-0.0095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system, depending on the severity of contamination.

INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.0048 -0.0095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE:

When microbial control is evident add 0.0024 -0.0095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system every 4 days, or as needed to maintain control.

BADLY FOULED SYSTEMS must be cleaned before treatment is begun.

CONTINUOUS FEED METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.0048 -0.0095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water to the system.

SUBSEQUENT DOSE: Maintain this level by pumping a continuous feed of 0.00095 -0.0048 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system per day.

BADLY FOULED SYSTEMS must be cleaned before treatment is begun.

FOR CONTROL OF FUNGI AND ALGAE

Add 0.029-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system depending on the severity of contamination.

INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.048-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: When microbial control is evident, add 0.029-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system daily, or as needed to maintain control.

BADLY FOULED SYSTEMS must be cleaned before treatment is begun.

CONTINUOUS FEED METHOD

INITIAL DOSE: When the system is noticeably fouled, add 0.048-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water to the system.

SUBSEQUENT DOSE: Maintain this treatment level by pumping a continuous feed of 0.029-0.095 gal AQUCAR DB 20 Water Treatment Microbiocide/1,000 gal of water in the system per day.

BADLY FOULED SYSTEMS must be cleaned before treatment is begun.

MEMBRANE SYSTEMS FOR INDUSTRIAL WATER

Product not registered for this use in California

AQUCAR DB 20 Water Treatment Microbiocide may be used to control bacteria and reduce biofouling in various membrane system types (reverse osmosis, ultrafiltration, nanofiltration, and microfiltration) used for industrial water processing. Acceptable applications include reverse osmosis for the production of boiler make-up water, electronic component rinsing, and industrial wastewater treatment.

NOTE: Reverse Osmosis (RO) concentrate streams must not be discharged to lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Permit (NPDES). Discharge of RO concentrate steams to sewer systems may require approval of the local sewer treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

AQUCAR DB 20 Water Treatment Microbiocide may be added to the RO feed water at a rate of 1 to 100 ppm based on the feed water flow rate (0.1 to 10 fl. oz./min per 1000 gallons/min. feed water, or 0.8 to 80 mls/min per cubic meter/min of feed water). Apply product to the service cycle feed water on a regular basis using an addition cycle of at least 30 minutes. The frequency of addition may be daily or as necessary in order to maintain RO productivity performance. For highly fouled systems, a 100 ppm dosage should be applied each day for several hours until the system performance has recovered.

NOTE: Do not add AQUCAR DB 20 Water Treatment Microbiocide in the presence of sodium bisulfite or other reducing agents which are being added to the feed water of the membrane system. In some situations the addition of any reducing agents must be suspended at least 15 minutes prior to the addition of AQUCAR DB 20 Water Treatment Microbiocide in order to avoid neutralization and deactivation of the active ingredient.

AQUCAR DB 20 Water Treatment Microbiocide may be added to the feed tank used for an off-line chemical cleaning procedure. Addition should be at a rate of 20 to 200 ppm based on the total amount of solution in the feed tank (2 to 20 fl. oz. per 1000 gallons, or 16 to 160 mls. per cubic meter). Following the complete transfer of feed solution, re-circulate or soak for 1 to 3 hours to ensure sufficient contact for all RO membrane modules with the DBNPA solution. Frequency of addition should be every 5 days or as needed.

NOTE: Add AQUCAR DB 20 Water Treatment Microbiocide separately to the feed tank system. Do not mix with other chemical additives as this may result in rapid decomposition of AQUCAR DB 20 Water Treatment Microbiocide due to the high pH of many additive formulas. It is important to thoroughly rinse the feed tank system so it is free of any high pH chemicals prior to introducing the AQUCAR DB 20 Water Treatment Microbiocide product.

HYDROTESTING

Product not registered for this use in California

FOR CONTROL OF BACTERIA

Water used to hydrotest pipelines or vessels should contain 100 to 1,000 ppm of AQUCAR™ DB 20 Water Treatment Microbiocide per 1,000 gallons water depending on water quality and length of time the equipment will remain idle.



NSF Non Food Compounds Listing
This product is acceptable for treating boilers, steam lines, and/or cooling systems (G7) where neither the treated water nor the steam produced may contact edible products in and around food processing areas.

LOT:



SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: AQUICAR™ DB 20 Water Treatment Microbiocide

Issue Date: 08/18/2015

Print Date: 09/23/2015

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: AQUICAR™ DB 20 Water Treatment Microbiocide

Recommended use of the chemical and restrictions on use

Identified uses:

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number:

800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Acute toxicity - Category 4 - Oral

Acute toxicity - Category 4 - Inhalation

Skin corrosion - Category 1

Serious eye damage - Category 1

Skin sensitisation - Category 1

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Harmful if swallowed or if inhaled
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Causes serious eye damage.

Precautionary statements**Prevention**

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing before reuse.

Storage

Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Polyethylene glycol	25322-68-3	>= 46.5 - <= 54.5 %
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	20.0%

Dibromoacetonitrile	3252-43-5	<= 3.0 %
Sodium bromide	7647-15-6	<= 4.0 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be immediately available.

Eye contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen bromide. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. If product becomes contaminated with water, monitor product for heat generation and/or decomposition. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Refer to section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Attempt to neutralize by adding materials such as Sodium bisulphite. Sodium metabisulfite. Neutralize with approximately 17.2 grams sodium bisulfite (NaHSO₃) or 15.7 grams sodium meta bisulphite (Na₂S₂O₅) for every 100 grams biocidal product. Absorb with materials such as: Dirt. Sand. Vermiculite. Zorb-all®. Hazorb®. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not get in eyes, on skin, on clothing. Avoid breathing mist. Avoid prolonged or repeated contact with skin. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in original container. Keep container tightly closed. Do not store in: Aluminum. Brass. Copper. Copper alloys. Mild steel. Stainless steel.

Storage stability

Shelf life: Use within 12 Month

Storage temperature: $\leq 35\text{ }^{\circ}\text{C}$ ($\leq 95\text{ }^{\circ}\text{F}$)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Polyethylene glycol	US WEEL	TWA aerosol	10 mg/m ³
2,2-Dibromo-3-nitrilopropionamide	Dow IHG	C	2 mg/m ³
Dibromoacetonitrile	Dow IHG	C	0.1 ppm
	Dow IHG	C	Absorbed via skin
Sodium bromide	Dow IHG	TWA	6 mg/m ³

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit

requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	Colorless to brown
Odor	Odorless to mild
Odor Threshold	No test data available
pH	1.5 - 5.0 <i>Literature</i>
Melting point/range	Not applicable
Freezing point	< -50 °C (< -58 °F) <i>Literature</i>
Boiling point (760 mmHg)	> 70 °C (> 158 °F) <i>Literature</i> Decomposition
Flash point	closed cup <i>Literature</i> none to 100°C (212 °F) open cup >= 182 °C (>= 360 °F) <i>Cleveland Open Cup</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	18.9 mmHg at 25 °C (77 °F) <i>Estimated.</i>
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.20 - 1.30 at 23 °C (73 °F) <i>Literature</i>
Water solubility	7.5 % at 20 °C (68 °F) <i>Literature</i>
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	20 cP at 25 °C (77 °F) (Brookfield Viscosity - @ 100 rpm, #0 spindle)
Kinematic Viscosity	16 cSt at 25 °C (77 °F) <i>Calculated.</i>
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No test data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 70°C (158°F) Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Oxidizers. Strong bases. Avoid contact with metals such as: Aluminum.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon dioxide. Bromine. Cyanogen bromide. Dibromoacetonitrile.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. May cause dizziness and drowsiness.

LD50, Rat, 510 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rabbit, > 2,000 mg/kg

Acute inhalation toxicity

Mist may cause irritation of upper respiratory tract (nose and throat).

LC50, Rat, female, 4 Hour, dust/mist, 1.25 mg/l

LC50, Rat, male, 4 Hour, dust/mist, 1.40 mg/l

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause pain disproportionate to the level of irritation to eye tissues.

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Sensitization

For similar material(s):

Has caused allergic skin reactions when tested in guinea pigs.

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant information found.

Specific Target Organ Systemic Toxicity (Single Exposure)

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Excessive exposure may increase the blood and tissue levels of bromine.

Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses

Carcinogenicity

Active ingredient did not cause cancer in laboratory animals. There is evidence that dibromoacetonitrile (DBAN), a possible degradation product of 2,2-dibromo-3-nitrilopropionamide (DBNPA), can produce cancer in laboratory animals. However, the relevance of this to humans is unknown.

Teratogenicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity

No relevant data found.

Mutagenicity

For the active ingredient(s): In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

Carcinogenicity**Component**

Dibromoacetonitrile

List

IARC

Classification

Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 3.6 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), static test, 48 Hour, 2.5 mg/l

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 1.5 mg/l

Chronic aquatic toxicity

Chronic toxicity to aquatic invertebrates

For the active ingredient(s):

NOEC, Daphnia magna (Water flea), flow-through test, 21 d, 0.25 mg/l

Persistence and degradability

Biodegradability: Considered to be rapidly degradable.

Bioaccumulative potential

Polyethylene glycol

Bioaccumulation: No relevant data found.

2,2-Dibromo-3-nitrilopropionamide

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 0.79 Measured

Bioconcentration factor (BCF): 13 Fish Measured

Dibromoacetone

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1.56 Measured

Sodium bromide

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Bioconcentration factor (BCF): < 40 Fish Measured

Mobility in soil

Polyethylene glycol

No relevant data found.

2,2-Dibromo-3-nitrilopropionamide

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient(Koc): 15 Estimated.

Dibromoacetone

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient(Koc): 13 Estimated.

Sodium bromide

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.(2,2-Dibromo-3-nitripropionamide)
UN number	UN 3265
Class	8
Packing group	III

Classification for SEA transport (IMO-IMDG):

Proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(2,2-Dibromo-3-nitripropionamide)
UN number	UN 3265
Class	8
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.(2,2-Dibromo-3-nitripropionamide)
UN number	UN 3265
Class	8
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number: 464-426

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

Causes irreversible eye damage

May be fatal if swallowed.

Causes skin irritation

Harmful if inhaled or absorbed through skin

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

This product is toxic to fish and invertebrates.

16. OTHER INFORMATION

Revision

Identification Number: 101189115 / A001 / Issue Date: 08/18/2015 / Version: 16.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
C	Ceiling limit
Dow IHG	Dow Industrial Hygiene Guideline
TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.